REMARKS

Claims 23-33 and 42-47 were pending and stand rejected. None of the claims has been amended.

Claims 23-26, 28-30, 32-33, and 42-47 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Oberg in view of Hershler. Applicant respectfully traverses.

On June 2, 2008, the Examiner and the undersigned attorney discussed whether to conduct an Examiner interview. The Examiner and the attorney agreed that a) the attorney would submit this Request for Reconsideration and b) the Examiner would contact the attorney before issuing an Advisory Action in order to discuss the application.

Claim 47

Neither Oberg nor Hershler discloses, teaches, or suggests the claimed element "wherein realigning the first set of data and the second set of data comprises associating a first angle in the first set of data with a second angle in the second set of data if the first angle and the second angle each refer to a corresponding event in the movement" as recited in claim 47.

Since claim 47 depends from claim 46, and claim 46 depends from claim 23, claims 23, 46, and 47 are reproduced below:

23. A method for quantifying asymmetry of joint angles of two limbs during a movement, comprising:
- determining a first set of data that comprises angles of a joint of a first limb as the first limb performs the movement;
- determining a second set of data that comprises angles of a joint of a second limb as the second limb performs a similar movement, wherein the two limbs comprise the first limb and the second limb;
- synchronizing the first set of data and the second set of data;
- generating a cyclogram based on the synchronized data; and
- determining a value of a characteristic of the generated cyclogram, wherein the value quantifies asymmetry of joint angles of the first limb and the second limb.

46. The method of claim 23 wherein synchronizing the first set of data and the second set of data comprises realigning the first set of data and the second set of data.

47. The method of claim 46 wherein realigning the first set of data and the second set of data comprises associating a first angle in the first set of data with a second angle in the second set of data if the first angle and the second angle each refer to a corresponding event in the movement.

Claim 47 is directed to a method for quantifying asymmetry of joint angles of two limbs during a movement. As described in the pending application, a first set of data is determined that comprises angles of a joint of a first limb as the first limb performs the movement (¶28). A second set of data is determined that comprises angles of a joint of a second limb as the second limb performs a similar movement, wherein the two limbs comprise the first limb and the second limb (¶28). The first set of data and the second set of data are synchronized (¶35). A cyclogram is generated based on the synchronized data (¶36). A value of a characteristic of the generated cyclogram is determined, wherein the value quantifies asymmetry of joint angles of the first limb and the second limb (¶¶37-38).

Because the legs move approximately out-of-phase during normal gait, the angle of a joint in one leg at a point in time cannot be directly compared to the angle of the corresponding joint in the other leg at the same point in time (¶35). In order to help compare these angles, the experimental angle data is synchronized (¶35). Synchronization is based on an identifiable gait event, such as a heel touchdown (¶35). The angle data for the first leg is realigned with the angle data for the second leg so that the angle of the left knee when the left heel touches down corresponds to the angle of the right knee when the right heel touches down (¶35).

Note that one set of experimental data, such as that shown in FIG. 3a, can be used to generate bilateral cyclograms whose shapes vary greatly. If the data is aligned based on corresponding instants of time, then the resulting bilateral cyclogram looks like the one shown in

FIG. 3d. On the other hand, if the data is aligned based on an identifiable gait event, then the resulting bilateral cyclogram looks like the one shown in FIG. 3e.

Oberg discusses a symmetry diagram that plots left knee angle versus right knee angle (abstract). This diagram, called a "knee-knee angle diagram," provides a way to evaluate the gait symmetry between a person's left side and right side (FIG. 5; page 45, bottom of column 1). If the person's gait is symmetric, the curve of the knee-knee angle diagram will be symmetric about a line with slope 1 (page 45, bottom of column 1).

In Oberg, the knee-knee angle diagram is based on data that is aligned based on corresponding instants of time. Specifically, the first set of data (the first leg) is aligned with the second set of data (the second leg) based on corresponding instants of time. For example, at a particular point in time, the angle of the first knee is -3 and the angle is the second knee is -6 (FIG. 5). Oberg's FIG. 5 looks similar to Applicant's FIG. 3d because both are based on data that is aligned based on corresponding instants of time.

Claim 47 recites, in part, "wherein realigning the first set of data and the second set of data comprises associating a first angle in the first set of data with a second angle in the second set of data if the first angle and the second angle each refer to **a corresponding event in the movement**" (emphasis added).

Oberg does not disclose, teach, or suggest this claimed element. In Oberg, the data from the first leg and the data from the second leg are always aligned based on corresponding instants of time. The data are never aligned based on a corresponding event in the movement (e.g., an identifiable gait event such as a heel touchdown).

With respect to claim 23, the Examiner admits that Oberg does not explicitly disclose the claimed element "synchronizing the first set of data and the second set of data" (Detailed Action,

p.3). Instead, the Examiner argues that all data collection "necessarily includes synchronization of some sort" and that, due to the nature of the bilateral data obtained, it is "necessary to synchronize the left and the right side data for proper collection and analysis" (Detailed Action, p. 3).

With respect to claims 46 and 47, the Examiner argues that Oberg "necessarily [inherently] discloses" that the first set of data and the second set of data are realigned by associating a first angle in the first set of data with a second angle in the second set of data if the first angle and the second angle each refer to a corresponding event in the movement (Detailed Action, p. 7). To support her argument, the Examiner states that "due to the nature of the bilateral gait data collected from each limb, it is necessary [inherent] that the first and second sets of data of both the first limb and the second limb would be 'synchronized' to refer to a corresponding event in the walking movement to enable proper analysis" (emphasis added; Detailed Action, p. 7).

Applicant disagrees. Oberg's data is aligned based on corresponding instants of time (not based on corresponding events in a movement), and yet Oberg's knee-knee angle diagrams (FIG. 5) do enable proper analysis. Thus, it is not necessary (inherent) that the first set of data and the second set of data are realigned by associating a first angle in the first set of data with a second angle in the second set of data if the first angle and the second angle each refer to a corresponding event in the movement.

Therefore, Oberg does not disclose, teach, or suggest the claimed element "wherein realigning the first set of data and the second set of data comprises associating a first angle in the first set of data with a second angle in the second set of data if the first angle and the second angle each refer to a corresponding event in the movement."

Hershler does not remedy this deficiency. All of the angle-angle diagrams in Hershler plot joint angles against each other for corresponding instants of time (introduction on page 109; single loop advantages on page 110). In other words, all of Hershler's angle-angle diagrams are based on data that is aligned based on corresponding instants of time (not based on corresponding events in a movement).

Thus, Hershler does not disclose, teach, or suggest the claimed element "wherein realigning the first set of data and the second set of data comprises associating a first angle in the first set of data with a second angle in the second set of data if the first angle and the second angle each refer to a corresponding event in the movement."

Therefore, claim 47 is patentable over Oberg and Hershler, alone and in combination.

Claim 45

Neither Oberg nor Hershler discloses, teaches, or suggests the claimed element "wherein the synchronized data represents the first limb and the second limb performing their movements in phase" as recited in claim 45.

Claim 45 depends from claim 23, which was reproduced above. Claim 45 recites:

45. The method of claim 23 wherein the synchronized data represents the first limb and the second limb performing their movements in phase.

As explained above, the legs move approximately out-of-phase during normal gait. That is, when one leg is straight out in front with the heel down and toes up, the other leg is bent behind with the toes down and heel up. If the legs moved in phase, then both legs would be in the same position and orientation. For example, both legs would be straight out in front with the heel down and toes up or both would be bent behind with the toes down and heel up. Note that the movement that is being performed in phase (as represented by the synchronized data) is the

movement performed by one leg during gait. That is, the movement is the swinging of the leg at the hip joint and the bending and straightening of the knee.

Claim 45 recites, in part, "wherein the synchronized data represents the first limb and the second limb performing their movements **in phase**" (emphasis added). When the first limb and the second limb perform their movements in phase, the data is aligned based on a corresponding event in the movement (e.g., an identifiable gait event such as a heel touchdown). As explained above, all of Oberg's knee-knee angle diagrams and Hershler's angle-angle diagrams are based on data that is aligned based on corresponding instants of time (not based on corresponding events in a movement such that the movements are performed in phase).

Therefore, claim 45 is patentable over Oberg and Hershler, alone and in combination.

Applicant respectfully submits that claims 45 and 47 are allowable over the cited art of record and requests that the Examiner allow these claims. The Examiner is invited to contact the undersigned in order to advance the prosecution of this application.

Respectfully submitted,
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